APS Resource®
Your Aftermarket Solution
6219 West Eastwood Court • Mequon, Wisconsin 53092 • TEL: (262) 518-1000 • FAX: 1-800-827-7491

APS 2000® VEHICLE RESTRAINT

Installation and Owner's Manual

This manual applies to Vehicle Restraints manufactured beginning AUGUST 2013 with the serial numbers 15,017,001 and higher.

⚠ WARNING

Do not install, operate or service this product unless you have read and understand the Safety Practices, Warnings, and Installation and Operating Instructions contained in this manual. Failure to do so could result in death or serious injury.

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SAFETY SIGNAL WORDS

You may find safety signal words such as DANGER, WARNING, or CAUTION throughout the Owners Manual. Their use is explained below.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Notice is used to address practices not related to personal injury.

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LIMITED WARRANTY

THIS LIMITED WARRANTY IS APS RESOURCE'S SOLE AND EXCLUSIVE WARRANTY WITH RESPECT TO THE VEHICLE RESTRAINT AND IS IN LIEU OF ANY OTHER GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED.

APS Resource warrants that this APS 2000® will be free from flaws in material and workmanship under normal use for a period of two (2) years from the earlier of 1) 60 days after the date of initial shipment by APS Resource, or 2) the date of installation of the APS 2000® by the original purchaser, provided that the owner maintains and operates the APS 2000® in accordance with this User's Manual.

In the event that this APS 2000® proves deficient in material or workmanship within the applicable Limited Warranty period, owner shall so notify APS Resource, and APS Resource will, at its option:

1. Replace the APS 2000®, or the deficient portion(s) thereof, without charge to the owner; or

2. Alter or repair the APS 2000®, on site or elsewhere, without charge to the owner.

This Limited Warranty does not cover any failure caused by improper installation, abuse, improper operation, negligence, or failure to maintain and adjust the APS 2000® properly. Parts requiring replacement due to damage resulting from vehicle impact, abuse, or improper operation are not covered by this warranty. APS RESOURCE DISCLAIMS ANY RESPONSIBILITY OR LIABILITY FOR ANY LOSS OR DAMAGE OF ANY KIND (INCLUDING WITHOUT LIMITATION, DIRECT, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES, OR LOST PROFITS OR LOST PRODUCTION) arising out of or related to the use, installation or maintenance of the APS 2000® (including premature product wear, product failure, property damage or bodily injury resulting from use of unauthorized replacement parts or modification of the APS 2000®). APS Resource's sole obligation with regard to a APS 2000® that is claimed to be deficient in material or workmanship shall be as set forth in this Limited Warranty. This Limited Warranty will be null and void if the original purchaser does not notify APS Resource's warranty department within ninety (90) days after the product deficiency is discovered.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, INCLUDING, BUT NOT LIMITED TO, A WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH APS RESOURCE HEREBY DISCLAIMS.

APS RESOURCE
6219 W. EASTWOOD COURT
MEQUON, WI. 53092

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SAFETY PRACTICES

⚠WARNING

Read these safety practices before installing, operating or servicing the APS 2000® VEHICLE RESTRAINT. Failure to follow these safety practices could result in death or serious injury.

READ AND FOLLOW THE OPERATING INSTRUCTIONS IN THIS MANUAL BEFORE OPERATING THE APS 2000® VEHICLE RESTRAINT. If you do not understand the instructions, ask your supervisor to teach you how to use the Vehicle Restraint.

Improper installation of the Vehicle Restraint could result in death or serious injury to dock workers or other users of the Vehicle Restraint.

Be certain to follow the installation instructions in this manual.

INSTALLATION AND OPERATION

Use of the restraint is restricted to trained operators. Use by untrained people can cause property damage, bodily injury and/or death. Your supervisor should teach you the safe and proper way to use the Vehicle Restraint. Read and follow the complete OPERATION PROCEDURE on page 6 before use. DO NOT USE THE VEHICLE RESTRAINT IF IT IS NOT WORKING PROPERLY. Tell your supervisor it needs repair.

Be certain bystanders in the driveway stand clear when the Vehicle Restraint is operated.

Do not install the Vehicle Restraint anchor bolts into aged or unsound concrete. For brick or block wall applications, call APS Resource at 262-518-1000.

Do not load or unload any vehicle unless you make certain the Vehicle Restraint has securely hitched the vehicle's rear impact guard (RIG) and the vehicle has set the brakes. If the Vehicle Restraint does not hitch the vehicle RIG for any reason, BE CERTAIN TO CHOCK THE VEHICLE WHEELS BEFORE LOADING OR UNLOADING.

Before chocking wheels or engaging the vehicle restraint, dump the air from the air ride suspensions and set the parking brakes.

MAINTENANCE AND SERVICE

If the Vehicle Restraint does not operate properly using the procedures in this manual, BE CERTAIN TO CHOCK THE VEHICLE WHEELS BEFORE LOADING OR UNLOADING. Call APS Resource for service.

Place barricades around pit on dock floor and driveway while installing, maintaining or repairing vehicle restraining device.

Do not stand in the driveway between the dock and a backing vehicle.

Do not use the Vehicle Restraint as a step.

Keep hands and feet clear of guide tracks and moving parts at all times.

All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

Before doing any electrical work, make certain the power is disconnected and properly tagged or locked off.

If it is necessary to make troubleshooting checks inside the control box with power on, USE EXTREME CAUTION. Do not place fingers or uninsulated tools inside the control box. Touching wires or other parts inside the control box could result in electrical shock, serious injury or death.

When lifting the carriage during service or assembly, use a lifting device. Lifting by hand may result in back injury.

If you have any problems or questions, contact APS Resource at 262-518-1000.

INSTALLATION

MOUNTING CONSIDERATIONS

⚠WARNING

Before installation read and follow the Safety Practices. Failure to follow these safety practices could result in death or serious injury.

READ AND FOLLOW THE OPERATION INSTRUCTIONS IN THIS MANUAL BEFORE OPERATING THE APS 2000® VEHICLE RESTRAINT.

If you do not understand the instructions, ask your supervisor to teach you how to use the Vehicle Restraint.

Improper installation of the APS 2000® Vehicle Restraint could result in death or serious injury to dock workers or other users of the Vehicle Restraint.

Place barricades around pit on dock floor and driveway while installing, maintaining or repairing vehicle restraining device.

Be certain bystanders in the driveway stand clear when the Vehicle Restraint is operated.

Be certain to follow the installation instructions in this manual.

Do not install the Vehicle Restraint anchor bolts into aged or unsound concrete.

1. The dock face on which the APS 2000 Vehicle Restraint will be mounted must be flat to prevent binding of carriage assembly. If the dock face is not flat it may be necessary to use shims or physically modify the dock face to provide a flat mounting surface. If shimming is required, it is necessary to shim behind the roller track as well as at the anchor bolts. Consult APS Resource.

   APS 2000 Vehicle Restraints require a minimum 4" bumper projection from the front of the bumper to the rear of the roller track plate of the restraint (the mounting surface). Less than 4" of projection can allow vehicle RIG to damage the restraint. Some lip saddle type docklevelers may require modifications – consult APS Resource.

2. A standard installation of the APS 2000 Vehicle Restraint requires a minimum dock face height of 26". Consult the factory for dock face heights under 26".

3. The standard anchors provided with this product may only be used on docks constructed of solid concrete. Docks constructed with other materials require special mounting consideration which may include special brackets and a solid concrete approach. Contact APS Resource for information.

4. Do not install the Vehicle Restraint anchor bolts into aged or unsound concrete. For brick or block wall applications, contact APS Resource at 262-518-1000.

5. If the driveway beneath the Vehicle Restraint is affected by frost, additional clearance may be required between the Vehicle Restraint and the driveway to prevent damage.

6. **For installation of Vehicle Restraints with EOD type docklevelers or any other special mounting considerations not covered in this manual, contact APS Resource at 262-518-1000.**

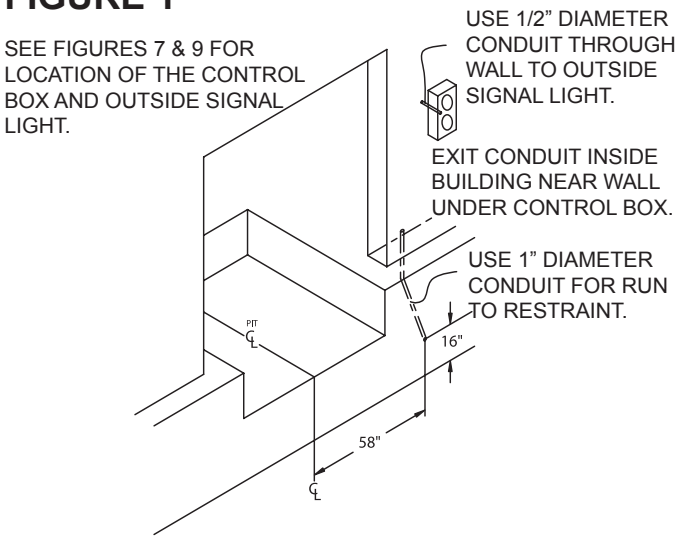
TOOLS REQUIRED

- Welder
- Impact or rotary drill with 5/8" diameter concrete drill bit
- 3/4" wrench
- General hand tools
- Touch up paint (Gold)
- Torque wrench (60 ft-lb min.)

CONDUIT INSTALLATION

1. When installing conduit through building walls and floors, refer to Figure 1.

FIGURE 1


SEE FIGURES 7 & 9 FOR LOCATION OF THE CONTROL BOX AND OUTSIDE SIGNAL LIGHT.
USE 1/2" DIAMETER CONDUIT THROUGH WALL TO OUTSIDE SIGNAL LIGHT.
EXIT CONDUIT INSIDE BUILDING NEAR WALL UNDER CONTROL BOX.
USE 1" DIAMETER CONDUIT FOR RUN TO RESTRAINT.
PIT
16"
58"

INSTALLATION

INSTALLATION WITH PIT TYPE DOCKLEVELERS

⚠WARNING

Do not install, operate, or service this product unless you have read and followed the Safety Practices, Warnings, and Installation and Operating Instructions contained in this manual. Failure to do so could result in death or serious injury. ALWAYS USE DOCKLEVELER SUPPORT WHEN WORKING UNDER A DOCKLEVELER RAMP OR LIP.

Place barricades around the pit on the dock floor and driveway while installing, maintaining or repairing dockleveler or vehicle restraint.

Improper installation of anchoring devices or installation into aged or unsound concrete could result in death or serious injury.

Inadequate lifting equipment or practices can cause a load to fall unexpectedly. Make sure the lifting chain or other lifting devices are in good condition and have a rated capacity of at least 500 lbs for the lifting angle used. Never allow anyone to stand on or near the restraint when it is lifted or positioned. Stand clear of the vehicle restraint when it is positioned. Failure to follow this warning can allow the restraint to fall, tip, or swing into people, causing death or serious injury.

1. The carriage assembly must be removed from the roller track plate before installation. First, remove the motor cover and spring covers. Then remove springs and nuts from spring bar. Slide carriage assembly upwards out of the roller track, making sure to keep the rollers on the axles.
   See Figure 2.

2. Place bottom edge of the roller track plate 5/8" above the driveway and center with the pit. See Figure 3.
   If the driveway is susceptible to heaving from frost, modify the driveway to provide additional clearance under the APS 2000® to prevent damage from the driveway movement.

3. Drill 5/8" dia holes into pit wall a minimum of 4-5/8" deep using holes in roller track as a guide.

FIGURE 2

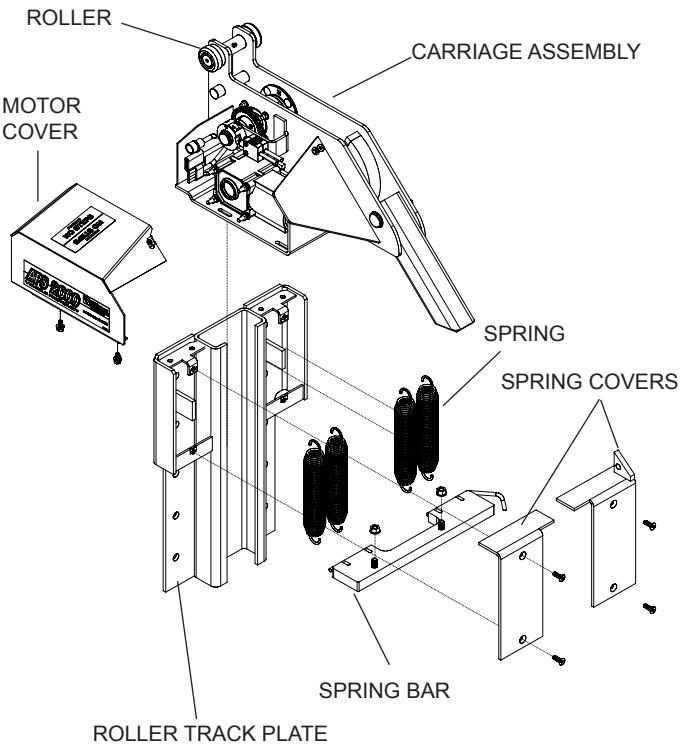
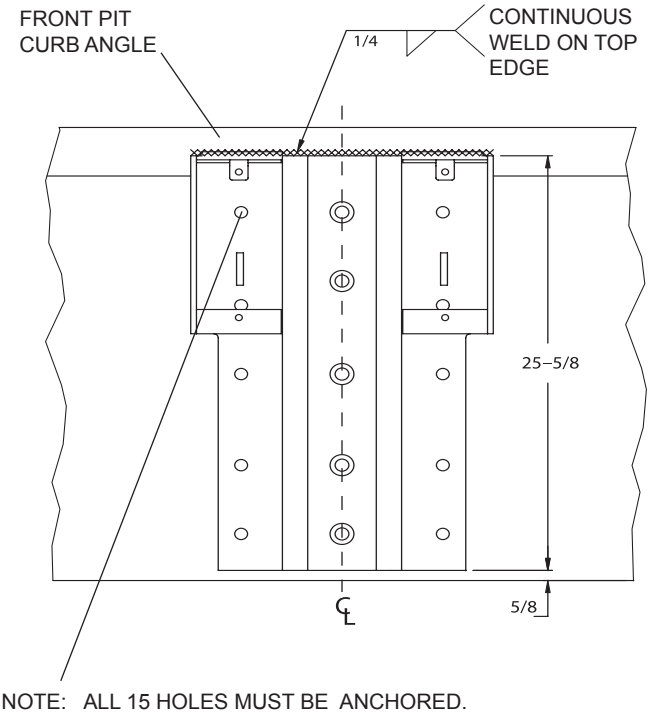


FIGURE 3



NOTE: ALL 15 HOLES MUST BE ANCHORED.

4. Check to see if the roller track plate is plumb and flush with dock face. If not, use (6) shims 2" wide x 25 5/8" long. If shims are over 1/2" thick use longer anchors. If shims need to be 1" thick or more, a bracket is required. Consult APS Resource. See Figure 4A.

⚠WARNING

The anchor bolts should be installed as the holes are drilled to prevent the Vehicle Restraint from shifting.

NOTICE

The anchor bolt heads must be tightly secured against the roller track plate to prevent interference with the carriage assembly.

5. Anchor the roller track plate to the dock face using the (15) 5/8" dia. x 4" long anchors provided. The anchor bolts must be torqued to 60 ft-lbs to achieve maximum holding strength. See Figure 3. If the top portion of the roller track plate is in contact with the front pit curb angle (such as installing in a deep pit) weld across the top of roller track plate to the curb angle.

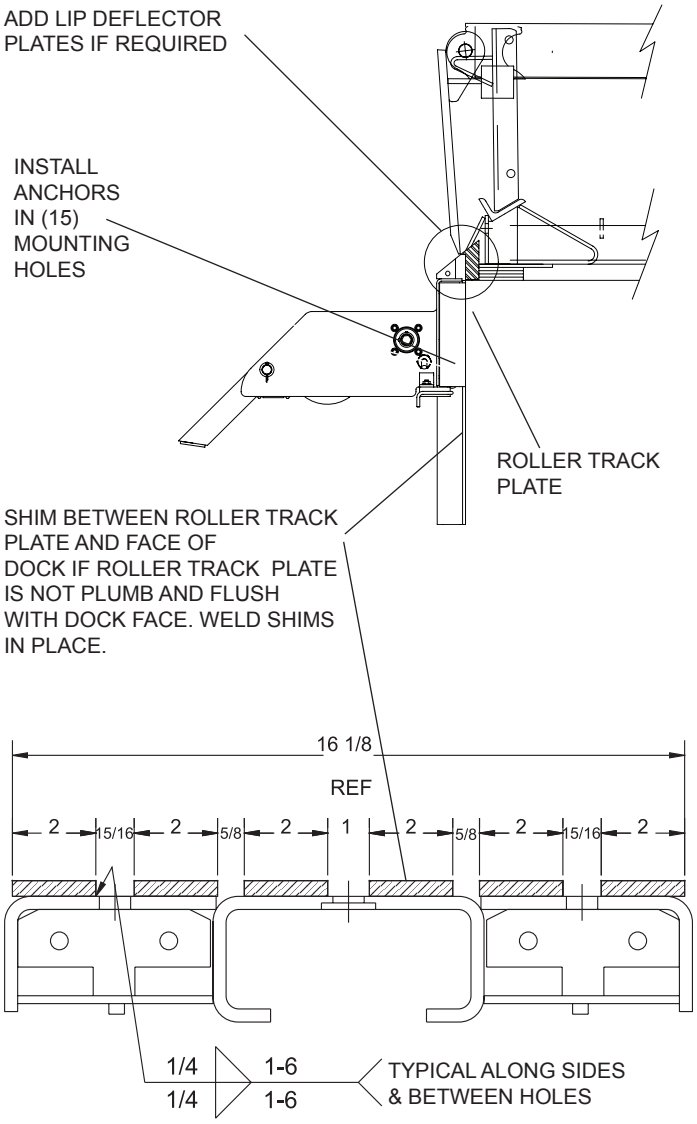
6. If the APS 2000 vehicle restraint is being installed at a loading dock with a pit-style dockleveler that does not have lip storage supports (otherwise known as lip keepers), there is a bolt-on lip deflector gusset kit (P/N AP5664) included with the APS 2000. This kit must be installed to prevent a pendant dock leveler lip from moving or storing behind the original lip deflector welded to the right-hand spring cover. See Figure 4B for installation.

7. Install additional lip deflector plates, as required by the application. Materials supplied by the installer. See Figure 4A.

⚠WARNING

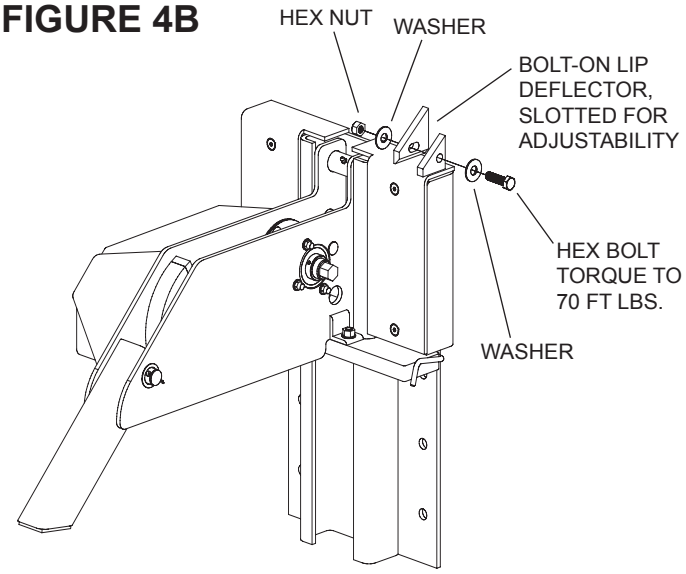
Improper installation that allows a pendant dock leveler lip to be supported by the restraint could result in death or serious injury. It is sometimes necessary to install lip deflector plates as indicated in Figure 4A to avoid any chance of the pendant lip storing on top of or behind the roller track plate. Materials supplied by installer.

FIGURE 4A



TOP VIEW

FIGURE 4B



INSTALLATION

8. **(ALTERNATE MOUNTING METHOD WITH EMBEDDED PLATE).**
   If the pit is either new or remodeled and has an embedded mounting plate, weld the roller track plate to the embedded mounting plate. See Figure 5 for proper size and type of welds required.

NOTICE

Never weld on the APS 2000® restraint after the motor is wired to the control box and the power is on. Damage to the controls or wiring may result.

9. Reinstall the carriage assembly to the roller track plate. Attach the four springs to the spring bar and the top of the roller track plate. Slide the carriage assembly into the roller track plate. Bolt the spring bar to the bottom of the carriage assembly and install the spring and motor covers. See Figure 6.

⚠WARNING

When lifting the carriage during service or assembly, use a lifting device. Lifting by hand may result in back injury.

Before doing any electrical work, make certain the power is disconnected and properly locked or tagged off. Failure to do so may result in death or serious injury. All electrical work must be done by a qualified technician and must meet all applicable codes.

10. Mount control box inside the building approximately 4 feet above the floor, to the left of the doorway. See Figure 7.

FIGURE 5

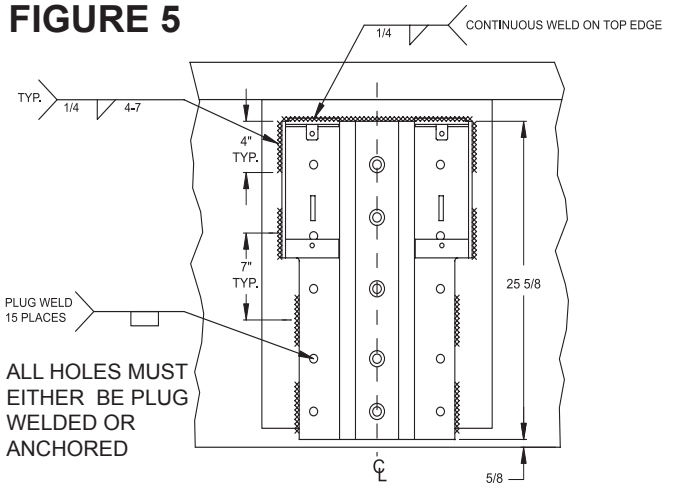


FIGURE 6

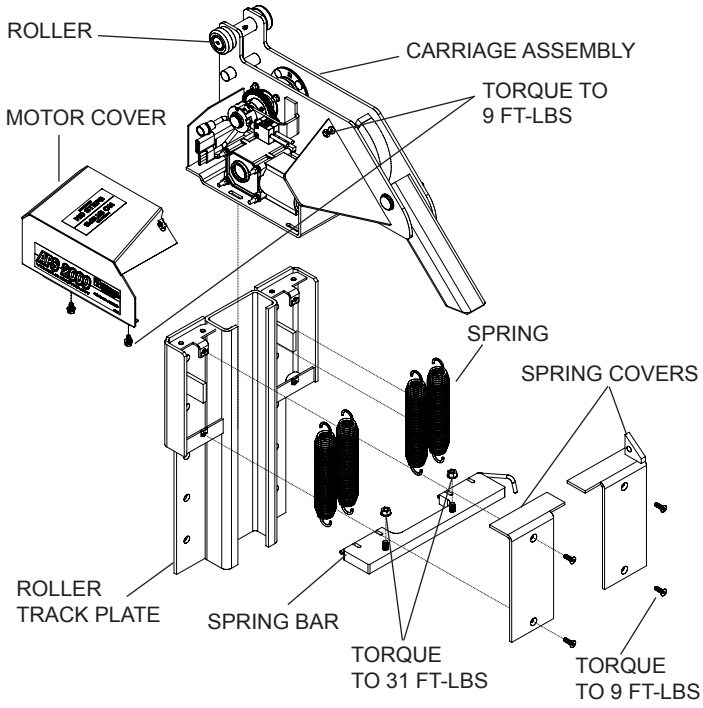
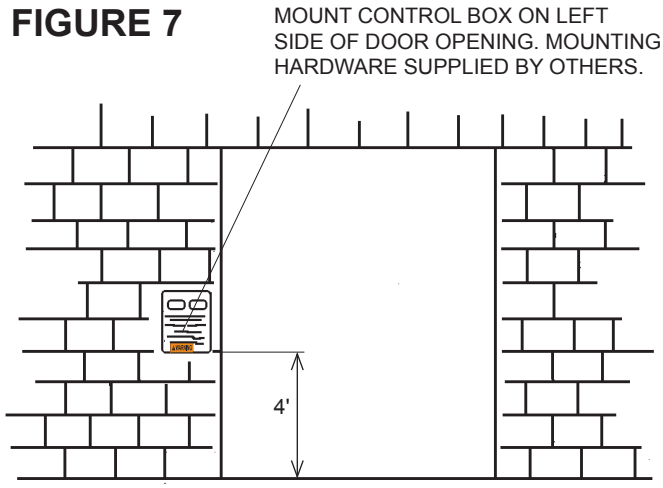


FIGURE 7



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11. Mount and wire outside signal light assembly to the control box. See the Wiring Diagram for electrical connections. Make sure outside light assembly is mounted with the red light on top and the green light on the bottom.

12. Mount electrical junction box (not supplied) near the Vehicle Restraint. See Figure 9.

13. The Vehicle Restraint includes a wiring harness. Run the harness from the carriage to the outside junction box. Leave about 4" of slack in the wiring harness. Wire (not supplied) from the control box to the junction box. See Wiring Diagram.

14. Wire power to the control box using terminals provided in the control box. See Wiring Diagram.

15. Permanently mount the vehicle drivers instruction signs on the outside wall under the signal light, or where clearly visible by driver, when installing the Red/Green Light Assembly. See Figure 9.

16. Operate the Vehicle Restraint following the Operation instructions. Check for smooth operation and proper light operation according to the Operation instructions.

17. Instruct the dock workers how to use the Vehicle Restraint using the Operation instructions.

⚠DANGER

Be certain power is off when wiring to the control box or signal lights. Failure to do so could result in electrical shock, death or serious injury.

Do not route control wiring for any other device through this control box unless properly shielded.

FIGURE 8

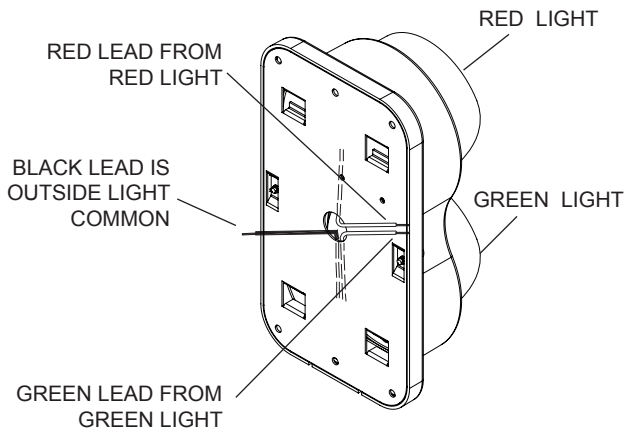
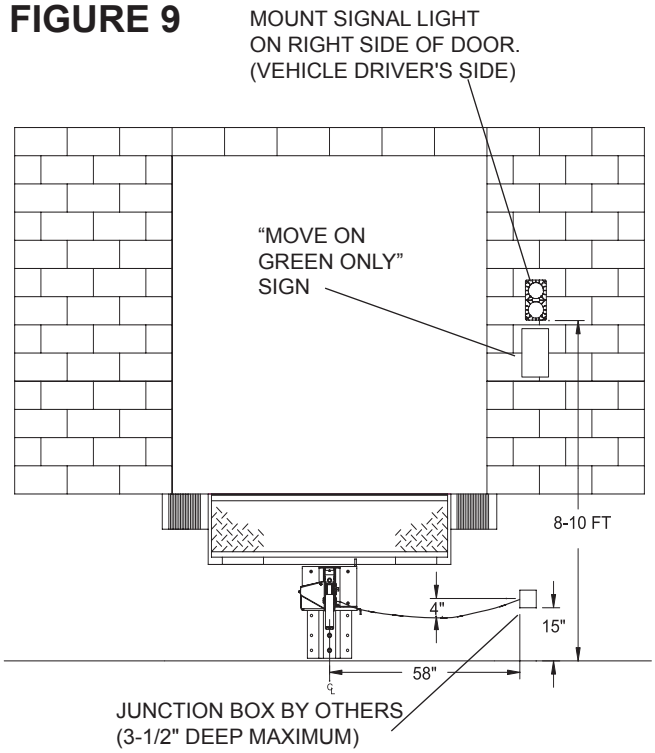


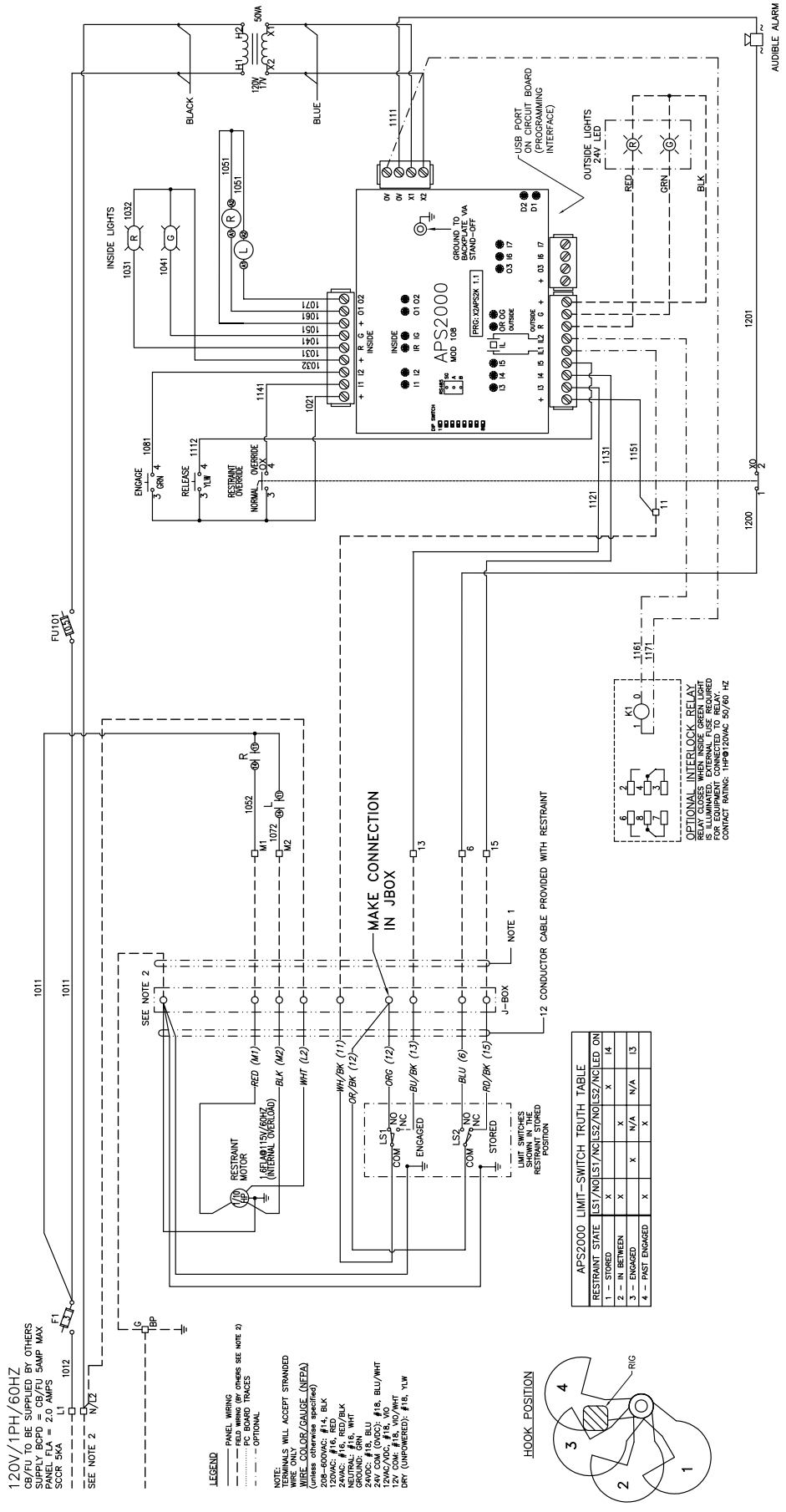
FIGURE 9


MOUNT SIGNAL LIGHT ON RIGHT SIDE OF DOOR. (VEHICLE DRIVER'S SIDE)
"MOVE ON GREEN ONLY" SIGN
8-10 FT
4"
15"
58"
JUNCTION BOX BY OTHERS (3-1/2" DEEP MAXIMUM)

***MOUNTING HARDWARE SUPPLIED BY OTHERS**

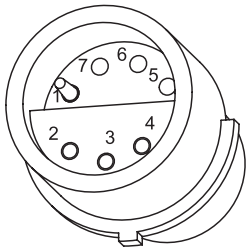
***DIMENSIONS ARE REFERENCE ONLY. USE OF A STANDOFF OR OTHER MOUNTING BRACKET COULD AFFECT THE DIMENSIONS SHOWN OR THE REQUIRED CABLE LENGTH.**

WIRING DIAGRAM

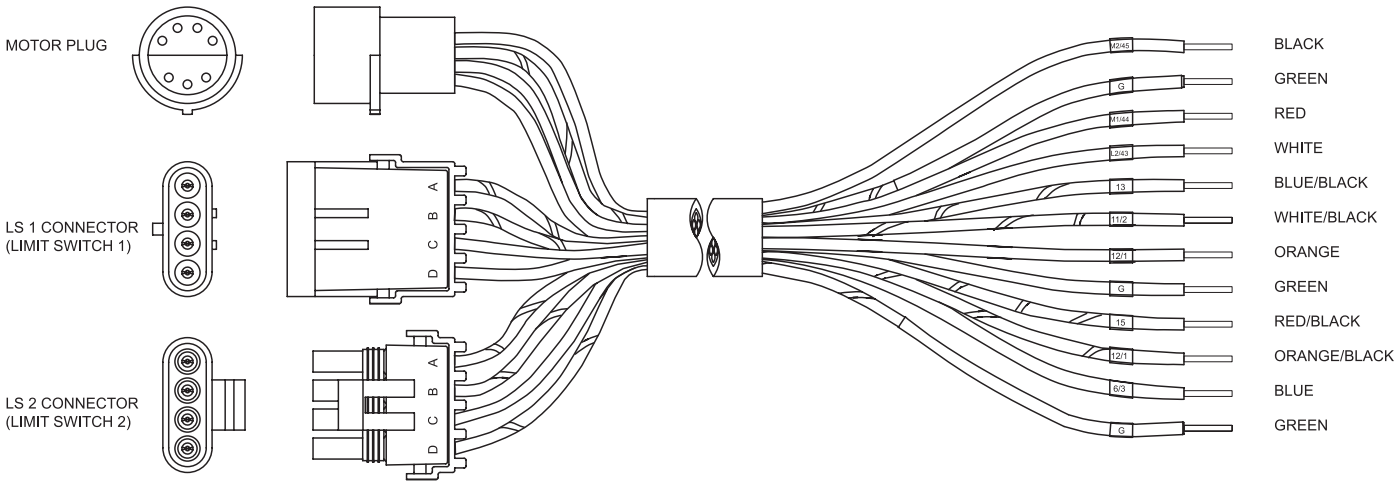


WIRE HARNESS KEY

	PLUG CONNECTIONS			
	PLUG RECEPTACLE	WIRE	WIRE LABEL	FUNCTION
MOTOR PLUG	1	GREEN	G	GROUND
	2	BLACK	M2/45	RELEASE
	3	WHITE	L2/43	COMMON
	4	RED	M1/44	ENGAGE
	5	-		
	6	-		
	7	-		
LS 1	A	BLUE/BLACK	13	
	B	WHITE/BLACK	11/2	
	C	ORANGE	12/1	
	D	GREEN	G	
LS 2	A	RED/BLACK	15	
	B	ORANGE/BLACK	12/1	
	C	BLUE	6/3	
	D	GREEN	G	



MOTOR PLUG DETAIL



C18205 CONTROL HARNESS

OPERATION

⚠WARNING

Use of the restraint is restricted to trained operators. Before operating the vehicle restraining device, read and follow the Safety Practices, Warnings, and Operation instructions contained in this manual. Use by untrained people could result in death or serious injury.

Before chocking the wheels or engaging the vehicle restraint, dump the air from the air ride suspensions and set the parking brake.

Do not load or unload any vehicle unless you make certain the Vehicle Restraint has securely hitched the vehicle's rear impact guard and the vehicle has set the brakes. If the Vehicle Restraint does not hitch the vehicle's RIG for any reason, BE CERTAIN TO CHOCK THE VEHICLE WHEELS BEFORE LOADING OR UNLOADING.

Visually inspect the Vehicle Restraint to ensure proper engagement. The notch on top of the hook must wrap over the RIG. See Figure 10.

Enter the vehicle only when the green signal light on the control box is illuminated. You must check the green signal light each time that the vehicle is entered. If the illuminated green light goes off at any time during loading operations, immediately cease loading operations and check the Vehicle Restraint to ensure that it is securely hitched.

If power to the Vehicle Restraint is interrupted, immediately cease operations and check the unit. Consult the troubleshooting instructions to reset the lights when power resumes.

Vehicles leaving or moving when loading and unloading are in process could result in death or serious injury.

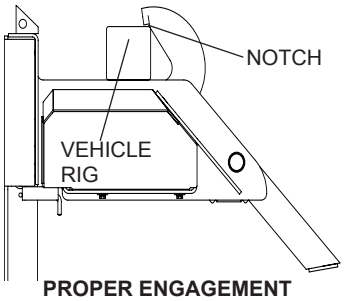
Failure to place the hook in the stored position when not in use could result in damage to the Vehicle Restraint and incoming trucks. Be certain bystanders in the driveway stand clear when the Vehicle Restraint is operated.

TO HITCH VEHICLE:

- Press “ENGAGE” button to restrain.
- Visually inspect the Vehicle Restraint to ensure proper engagement. The notch on top of the hook must wrap over the RIG. See Figure 10.

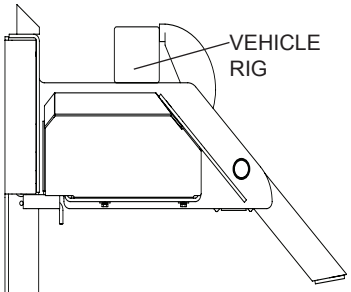
If vehicle cannot be hitched, red light will illuminate and the alarm will sound.

FIGURE 10



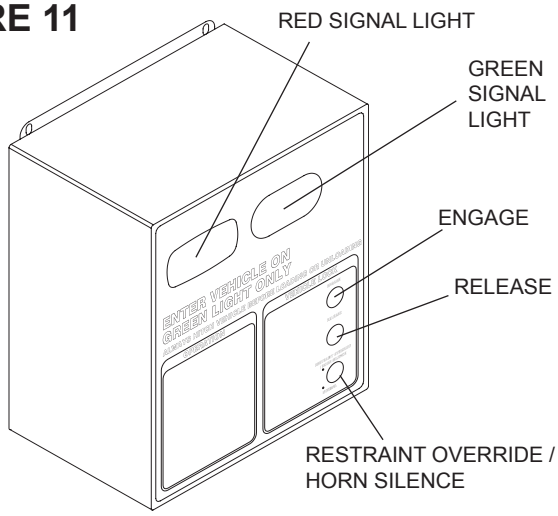
PROPER ENGAGEMENT (SECURELY HITCHED)

FIGURE 10A



NOT SECURELY HITCHED

FIGURE 11



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ENTER VEHICLE ON GREEN LIGHT ONLY:

- Be certain wheels are chocked and the vehicle brakes are set. If the vehicle cannot be hitched, and after wheels are chocked and the vehicle brakes are set:

  Turn key switch from "NORMAL" to "RESTRAINT OVERRIDE/HORN SILENCE". The inside lights will change from red to red/green and the alarm will silence.

TO RELEASE VEHICLE:

- Store dockleveler.
- If the inside light is green, press “RELEASE” push-button.

  If after pressing the "RELEASE" button, the inside light turns RED and the alarm sounds, the restraint is sensing it is not hitched and not properly released. Make sure trailer is parked firmly against the dock bumpers, and clear any obstructions. Turn the key switch from "NORMAL" to "RESTRAINT OVER-RIDE/HORN SILENCE", then turn key switch back to "NORMAL" to release the restraint.

- If inside lights are red/green, turn key switch from "RESTRAINT OVERRIDE/HORN SILENCE" to "NORMAL".

  If after turning the key switch to "NORMAL", the inside light turns RED and the alarm sounds, the restraint is sensing it is not hitched and not properly released. Make sure trailer is parked firmly against the dock bumpers, and clear any obstructions. Turn the key switch from "NORMAL" to "RESTRAINT OVERRIDE/HORN SILENCE", then turn key switch back to "NORMAL" to release the restraint.

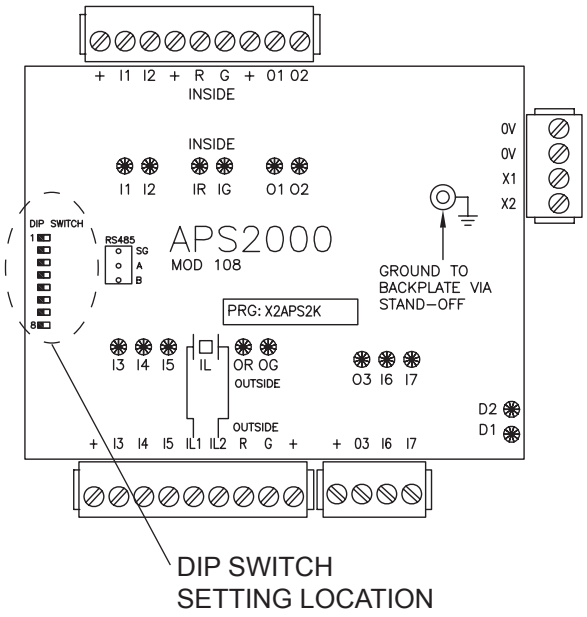
- The vehicle may now pull out.

OPTIONAL OPERATIONAL FEATURES

The APS 2000 control board has three optional features that can be selected by adjusting the DIP switch settings on the APS 2000 control board. See Figure 12 for the DIP switch setting location.

For the DIP switch setting to take effect, the service technician must disconnect power to the APS 2000 control panel prior to adjusting the DIP switch setting. Then re-apply power to the control panel after making the setting.

FIGURE 12



OPERATION

OPTIONAL OPERATIONAL FEATURES

DIP Switch #1
Inside communication light illumination

- Reference Figure 13 for this DIP switch setting detail.
- When DIP Switch #1 is in the OFF position, the inside communication lights will illuminate solid. The APS 2000 comes from the factory with this setting.
- When DIP Switch #1 is in the ON position, the inside communication lights will flash.

DIP Switch #2
Hook position in "RESTRAINT OVERRIDE/ HORN SILENCE" operating mode

- Reference Figure 14 for this DIP switch setting detail.
- When DIP Switch #2 is in the OFF position, the hook will lower when the APS 2000 is switched to "RESTRAINT OVERRIDE/HORN SILENCE". The APS 2000 comes from the factory with this setting.
- When DIP Switch #2 is in the ON position, the hook will maintain position when the operator turns the key switch from "NORMAL" to "RESTRAINT OVERRIDE/ HORN SILENCE".
- Always be certain wheels are chocked and vehicle brakes are set before switching to "RESTRAINT OVERRIDE/HORN SILENCE".

DIP Switch #3
Automatic Re-Engagement

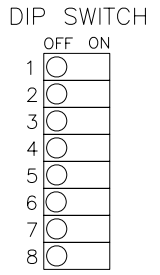
- Reference Figure 15 for this DIP switch setting detail.
- When DIP Switch #3 is in the OFF position, the automatic re-engagement feature is active. The APS 2000 comes from the factory with this setting.
- When DIP Switch #3 is in the ON position, the automatic re-engagement feature is NOT active.

Description of the Auto Re-Engagement Feature:
Once the notch on the top of the hook is wrapped over the RIG as shown in Figure 10, and the inside light turns green, the vehicle is safe to enter for the loading or unloading process.

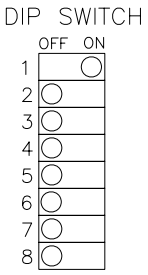
If during the loading or unloading process, the hook loses proper engagement with the RIG as shown in Figure 10A, the inside light will turn red and the alarm will sound. In this event, after a 3 second delay, the restraint will automatically attempt to properly engage the RIG.

◊ Only one re-engagement will be attempted by the APS 2000 vehicle restraint each occurrence.
◊ Provided a secure re-engagement is achieved, the APS 2000 vehicle restraint will return the inside light to green and the alarm will silence. **Enter the vehicle on a green light signal only.**

FIGURE 13

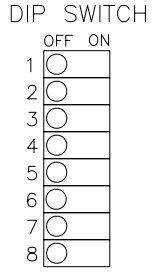


DIP SWITCH #1 = OFF
(Inside Communication Lights Solid Illumination)

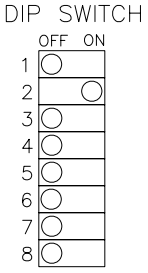


DIP SWITCH #1 = ON
(Inside Communication Lights Flashing Illumination)

FIGURE 14

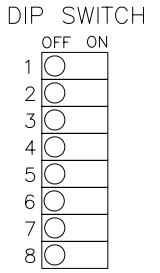


DIP SWITCH #2 = OFF
(Hook Lowers in "RESTRAINT OVERRIDE/HORN SILENCE" mode)

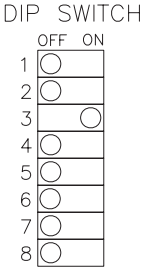


DIP SWITCH #2 = ON
(Hook Maintains Position in "RESTRAINT OVERRIDE/HORN SILENCE" mode)

FIGURE 15



DIP SWITCH #3 = OFF
(Auto Re-Engagement is Active)



DIP SWITCH #3 = ON
(Auto Re-Engagement is NOT Active)

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PLANNED MAINTENANCE

⚠WARNING

When lifting the carriage during service or assembly, use a lifting device. Lifting by hand may result in back injury.

Do not service this product unless you have read and followed the Safety Practices, Warnings, and Operation instructions contained in this manual. Failure to follow these safety practices could result in death or serious injury.

Check the lights to be certain they are returned to the proper display. If no vehicle is at the dock, or the vehicle is not hitched, the red inside light should be illuminated and the green outside light should be illuminated. If a vehicle is at the dock and is hitched or the wheels are chocked, the green inside light should be illuminated and the red outside light should be illuminated.

Before doing any electrical work (including changing bulbs), make certain the power is disconnected and properly tagged or locked off.

Place barricades around the pit on the dock floor and driveway while installing, maintaining or repairing the dockleveler or the vehicle restraint.

Before working on or around the Vehicle Restraint, visually confirm that the carriage assembly is at the top of its travel range. If not, STOP; do not work on or around the Vehicle Restraint. If the Vehicle Restraint is not at the top of its travel range, it may be due to an obstruction in the roller track. Under this condition the springs may be under considerable tension. Without properly securing the carriage assembly, the Vehicle Restraint is unsafe to work on or around. Call an approved and qualified technician familiar with the APS Resource line of products. For a list of approved and qualified technicians call APS Resource at 1-262-518-1000.

NOTICE

Use only lubricants shown. Improper lubrication or adjustments may cause operational problems.

Legend	
Symbol	**Description**
O	**Lubricate - Oil** Chain Lube
G	**Lubricate - Grease** Lithium and synthetic oil-based moly grease. Temperature range of -40° to 170°F, or as required by service conditions
	Check Fasteners or Adjust Torque (Torque Noted)
	Cleaning (Location - Frequency)

FIGURE 16

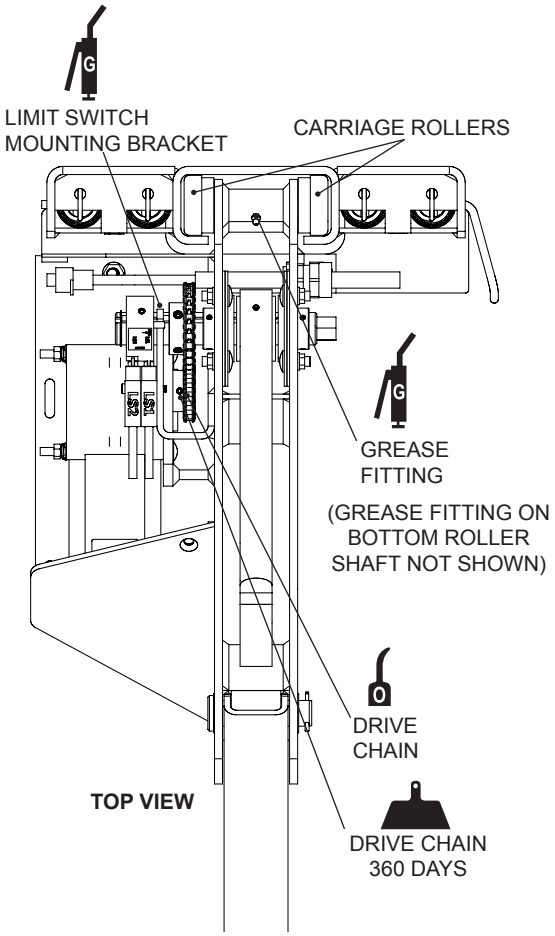
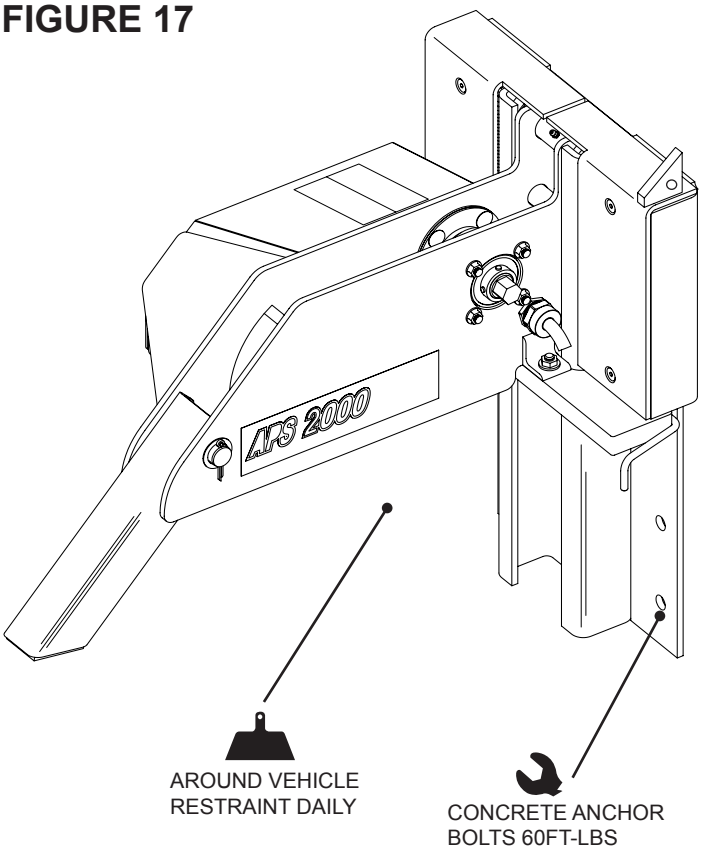


FIGURE 17



PLANNED MAINTENANCE

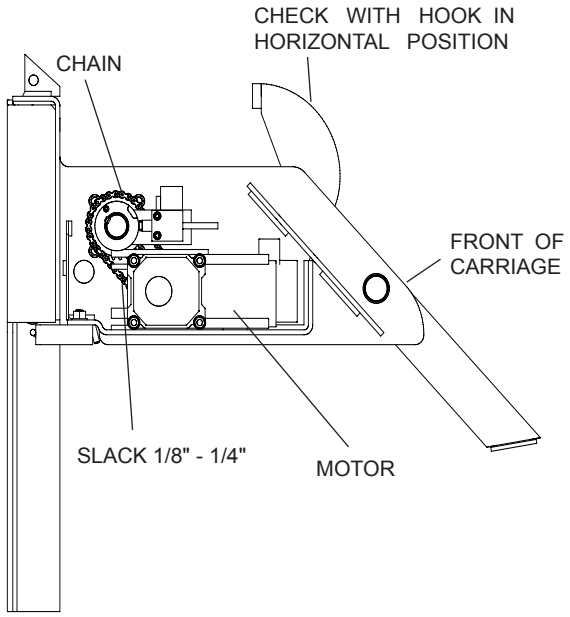
PLANNED MAINTENANCE SCHEDULE

	Daily	180 Days	360 Days
Cleaning	1. As required to remove debris around the Vehicle Restraint.	1. Perform all daily cleaning.	1. Perform all daily and 180-day cleaning. 2. Clean the drive chain with solvent.
Lubrication	Not Required	1. Lubricate the drive chain thoroughly with chain lube. 2. Lubricate the four roller bearings using the grease fittings located on the top and bottom roller shafts. Use a lithium and synthetic oil-based moly grease.	1. Perform 180-day lubrication. 2. Lubricate the limit switch mounting bracket between the drive sprocket and cam. Use a lithium and synthetic oil-based moly grease.
Inspection & Adjustments	1. Inspect dock bumpers. Missing bumpers must be replaced. 2. Inspect all operating, warning, and caution labels and signs to be sure they can be read. Replace labels and signs as required. See the PARTS LIST for part numbers.	1. Perform all daily inspection and adjustments. 2. Inspect dock bumpers. 4 inches of protection is required. Worn, torn, loose or missing bumpers must be replaced. 3. Inspect the Vehicle Restraint for damage which may weaken the anchoring strength. Retighten the concrete anchor bolts to 60 ft-lbs if necessary. 4. Inspect the outside electrical connections (junction box, conduit, power harness) and outside communication light. Loose or damaged components must be repaired.	1. Perform all daily and 180-day inspection and adjustments. 2. Inspect the motor drive chain, and tighten if necessary. See "CHAIN ADJUSTMENT PROCEDURE".
Operation	1. Operate the Vehicle Restraint to assure that it operates smoothly and that the carriage moves freely up and down. 2. Verify that the horn is working properly. 3. Check the lights on the control box. The RED or GREEN light must be illuminated at all times. Push the buttons on the control box to be certain both lights are working. Replace LED modules as required. See the PARTS LIST for part numbers. 4. Check the outside communication light. The RED or GREEN light must be illuminated at all times. Push the buttons on the control box to be certain both lights are working. Replace LED modules as required. See the PARTS LIST for part numbers.	1. Perform all daily operational checks. 2. Perform operational test after servicing the Vehicle Restraint.	1. Perform all daily and 180-day operational checks. 2. Perform operational test after servicing the Vehicle Restraint.

CHAIN ADJUSTMENT PROCEDURE

1. Move the hook to horizontal position and remove motor cover. See Figure 18.
2. Check the drive chain slack. It should not have more than 1/4" slack. See Figure 18.
3. If the chain needs adjustment, loosen the three nuts on the motor mounting carriage bolts and move the motor toward the front of the carriage. Make sure the sprockets are in line and tighten the mounting bolts. Recheck the slack in the chain. See Figure 18.
4. Reinstall the motor cover.
5. Turn power on and press "RELEASE" push-button to store the hook.

FIGURE 18



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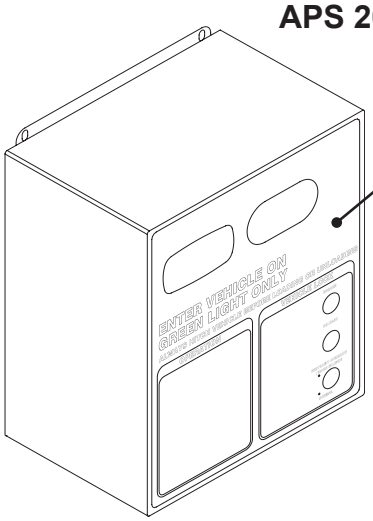
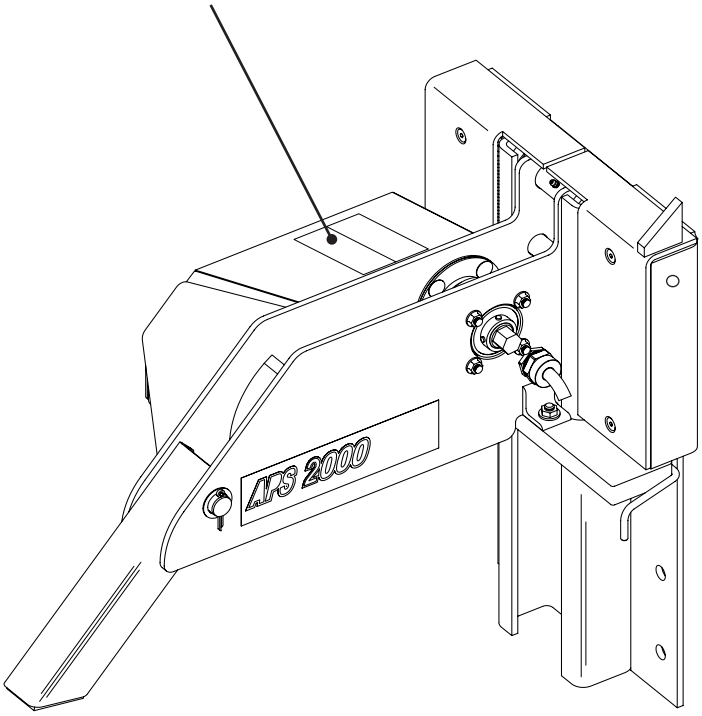
PLANNED MAINTENANCE

SAFETY LABELS AND SIGNS

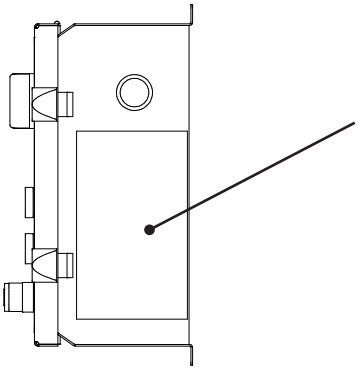
PANEL DECAL
APS 2000 INSTRUCTIONS
6006571
QTY. 1

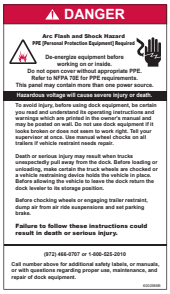


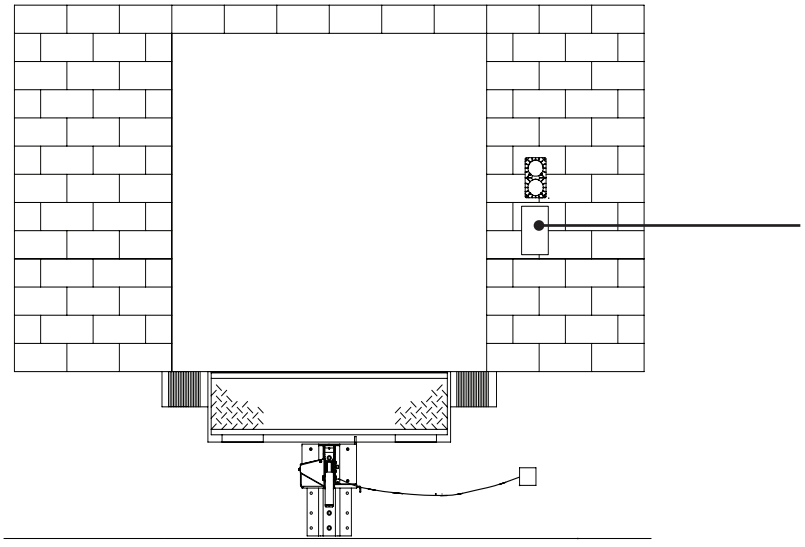
WARNING LABEL
138861
QTY. 1



ARC AND SHOCK
HAZARD LABEL
6002986
QTY. 1




DANGER
Arc Flash and Shock Hazard
PPE [Personal Protective Equipment] Required
De-energize equipment before working on or inside.
Do not open cover without appropriate PPE.
Refer to NFPA 70E for PPE requirements.
This panel may contain more than one power source.
Hazardous voltage will cause severe injury or death.
To avoid injury, before using dock equipment, be certain that you understand and follow all safety labels and warnings which are printed in the owner's manual and may be posted on wall. Do not use dock equipment if it looks broken or does not seem to work right. Tell your supervisor at once. Use manual wheel chocks on all trailers if vehicle restraint needs repair.
Death or serious injury may result when trucks unexpectedly pull away from the dock. Before loading or unloading, make certain the truck wheels are chocked or a vehicle restraining device holds the vehicle in place. Never drive a truck away while any part of the dock return the dock leveler to its vertical position.
Before chocking wheels or engaging trailer restraint, dump air from air ride suspensions and set parking brake.
Failure to follow these instructions could result in death or serious injury.
(972) 466-0707 or 1-800-523-2010
Call number above for additional safety labels, or manuals, or with questions regarding proper use, maintenance, and repair of dock equipment.



MOVE ON GREEN
ONLY SIGN
709832
QTY. 1

TROUBLESHOOTING

⚠ WARNING

Do not service this product unless you have read and followed the Safety Practices, Warnings, and Operation instructions contained in this manual. Failure to follow these safety practices could result in death or serious injury.

TROUBLESHOOTING

1. Lights do not work and the hook does not move.
   - 1.1 No power in control box. Check the fused disconnect and fuse block in the control box and the circuit breaker for incoming power to the control box.
   - 1.2 Not wired properly. Refer to the wiring diagram inside the control box and check all wiring and connections.

2. Lights are working but the hook does not move.
   - 2.1 Drive chain is either loose or broken. Adjust or replace as needed.
   - 2.2 No power to motor. Check all wiring connections from the control box to the motor.
   - 2.3 Drive motor not working. Replace.
   - 2.4 "ENGAGE" or "RELEASE" push-button switch not working. Replace as needed.
   - 2.5 Keyswitch is in "RESTRAINT OVERRIDE/HORN SILENCE" position. Turn keyswitch to "NORMAL" position.

3. Lights are working but the hook does not move all the way up or down.
   - 3.1 Incoming voltage is low. Check voltage.
   - 3.2 Motor mounting bolts are loose. Check for proper alignment between the sprockets and retighten bolts.

4. Hook moves but none of the lights work.
   - 4.1 LED modules burned out. Check LED modules and replace as needed.
   - 4.2 Bad wiring connections. Check all wiring connections. A good ground is required.

5. Hook and horn work but the lights do not change from red to green or green to red.
   - 5.1 Not wired properly. Check wiring.
   - 5.2 Limit switch LS2 not working. Replace.

6. Hook and lights work but the alarm horn does not work.
   - 6.1 Not wired properly. Check wiring.
   - 6.2 Alarm horn not working. Replace.
   - 6.3 Limit switch not working. Replace.

7. Hook and lights work but the alarm horn continuously sounds.
   - 7.1 Not wired properly. Check wiring.
   - 7.2 Limit switch LS2 not working. Replace.

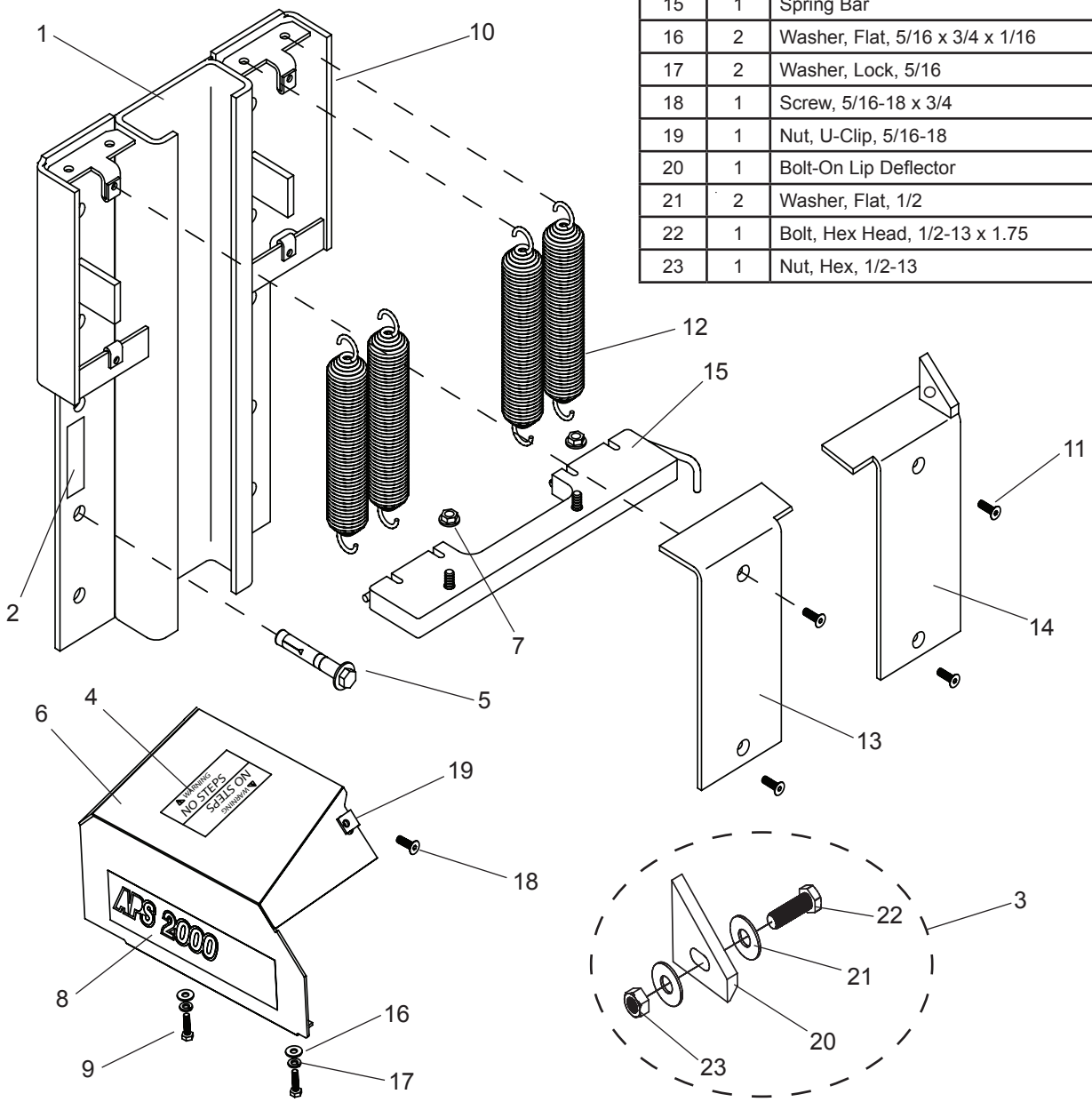
8. Carriage assembly does not return to the proper stored position.
   - 8.1 Springs are either weak or broken. Replace.
   - 8.2 Roller track plate bent. Check for proper installation and replace if necessary.
   - 8.3 Carriage not moving freely up and down in the track. This may be due to an obstruction in the roller track. STOP! Do not work on or around the Vehicle Restraint. Under this condition the springs may be under considerable tension and without properly securing the carriage assembly, the Vehicle Restraint is unsafe to work on or around. Call an approved and qualified technician familiar with the APS Resource line of products. For a list of approved and qualified technicians call APS Resource at 262-518-1000.

PARTS LIST

⚠WARNING

To ensure proper function, durability and safety of the product, only replacement parts that do not interfere with the safe, normal operation of the product must be used. Incorporation of replacement parts or modifications that weaken the structural integrity of the product, or in any way alter the product from its normal working condition at the time of purchase from APS RESOURCE®, could result in product malfunction, breakdown, premature wear, death or serious injury.

ITEM	QTY	DESCRIPTION	P/N
1	1	Weldment, Roller Track	AP5591
2	1	Label, Safety Products	713757
3	1	Kit, Bolt-On Lip Deflector	AP5664
4	1	Label, Warning	138861
5	15	Bolt, Anchor, 5/8 x 4	AP6821
6	1	Cover, Motor	AP5588
7	2	Nut, Serrated Flange, 7/16-14	131535
8	2	Label, APS 2000	AP2523
9	2	Bolt, Hex Head, 5/16-18 x 3/4	000799
10	4	Nut, Cage, 5/16	131527
11	4	Screw, Flat Head Socket, 5/16-18 x 1	131528
12	4	Spring, Extension	101097
13	1	Spring Cover, Left-Hand	156098
14	1	Spring Cover, Right-Hand	713574
15	1	Spring Bar	AP1559
16	2	Washer, Flat, 5/16 x 3/4 x 1/16	000055
17	2	Washer, Lock, 5/16	000501
18	1	Screw, 5/16-18 x 3/4	AP2548
19	1	Nut, U-Clip, 5/16-18	C51556
20	1	Bolt-On Lip Deflector	AP5636
21	2	Washer, Flat, 1/2	000524
22	1	Bolt, Hex Head, 1/2-13 x 1.75	131370
23	1	Nut, Hex, 1/2-13	SE214241



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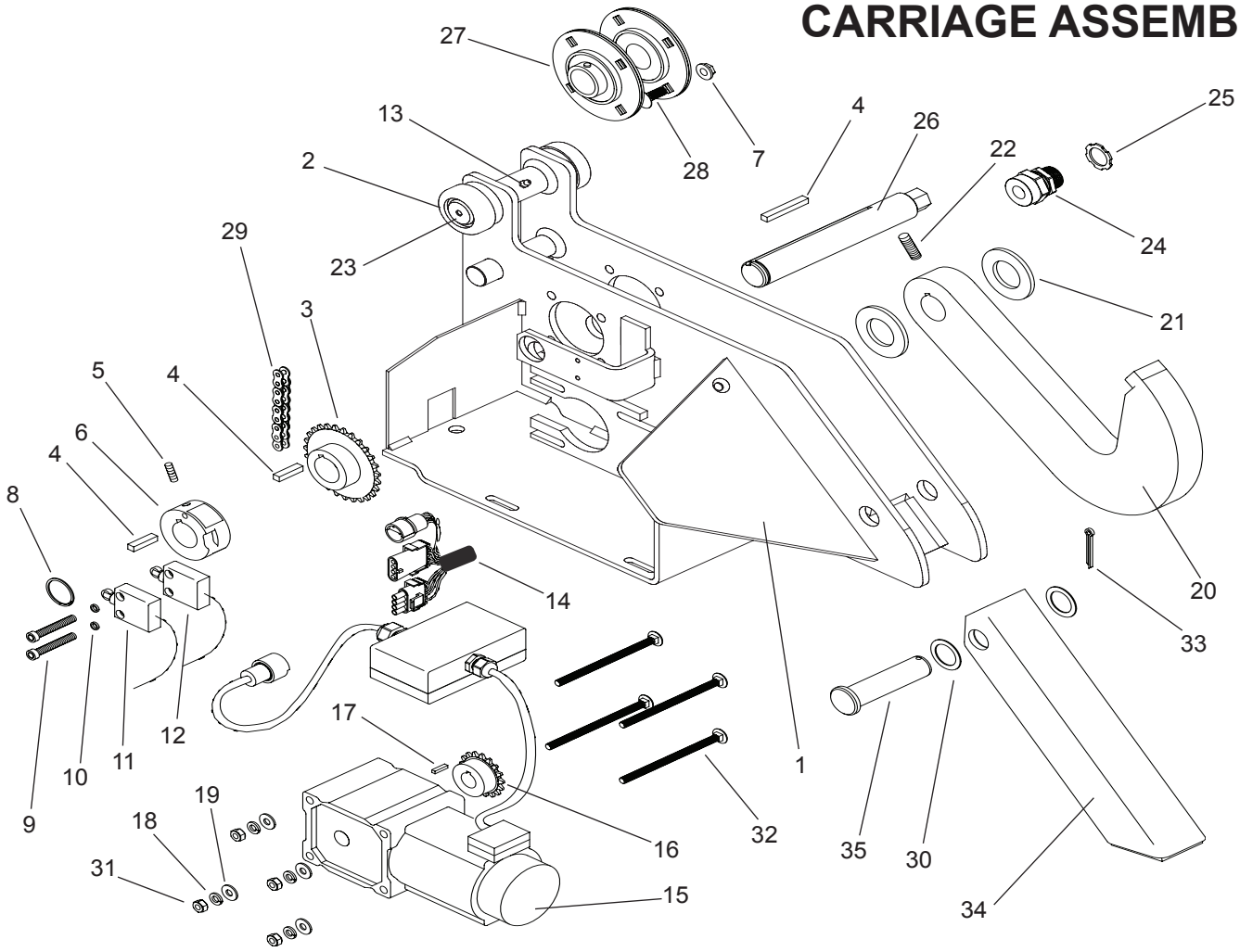
PARTS LIST

CARRIAGE ASSEMBLY



ITEM	QTY	DESCRIPTION	P/N
1	1	Weldment, 9" Restraint Carriage	AP5587
2	4	Roller, Carriage	C15782
3	1	Sprocket, Drive	713579
4	3	Key	131539
5	1	Screw, Set, 5/16-18 x 1/2	AP4773
6	1	Cam, APS 2000	AP2541
7	8	Nut, Serrated Flange, 3/8-16	131533
8	1	Ring, Retaining	131530
9	2	Screw, Socket Head, 1/4-20 x 1-1/2	C51636
10	2	Washer, Lock, 1/4	C51802
11	1	Switch, Limit, LS2	C18212
12	1	Switch, Limit, LS1	C18211
13	2	Grease Fitting	156281
14	1	Wire Harness (Includes Items 24 & 25)	C18205
15	1	Motor Assy (Includes Items 16 & 17)	AP2515
16	1	Sprocket, Motor	713582
17	1	Key, Drive Sprocket	AP4164
18	4	Washer, Lock, 5/16	000501

ITEM	QTY	DESCRIPTION	P/N
19	4	Washer, Flat, 5/16	000055
20	1	Kit, Hook w/ Set Screw	AP5560
21	2	Bushing, Machinery	000186
22	1	Screw, Set, 5/16-18 x 3/4	AP5559
23	4	Screw, Set	156282
24	1	Cord Grip, 3/4	061848
25	1	Locknut, Cord Grip	061847
26	1	Hook Shaft	156099
27	2	Bearing	091116
28	8	Bolt, Carriage, 3/8-16 x 1	131534
29	1	Chain, #35 w/ Master Link	AP2502
30	2	Washer, Flat, 1-1/2 O.D.	000064
31	4	Nut, Hex, 5/16-18	000303
32	4	Bolt, Carriage, 5/16-18 x 5	AP1536
33	1	Pin, Cotter, 5/32 x 1-1/2	AP2509
34	1	Slope Extension	AP2550
35	1	Pin, Slope Extension	C105495

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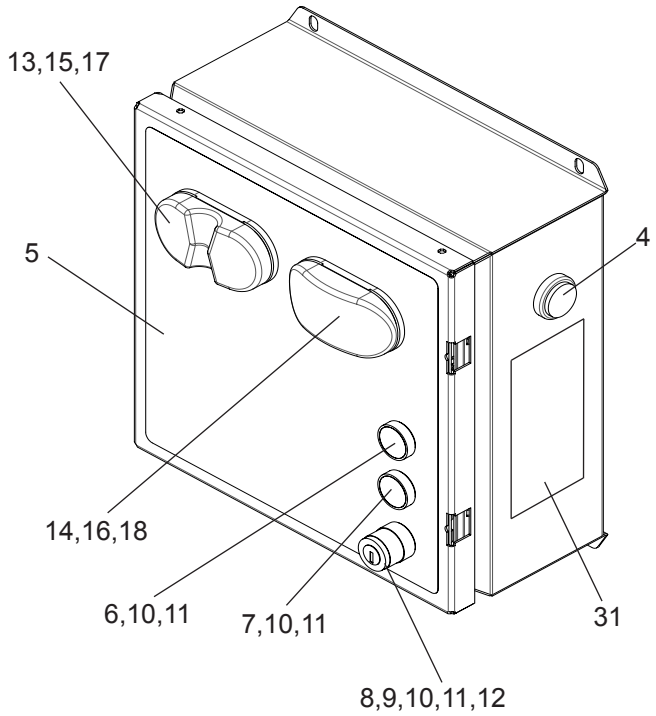
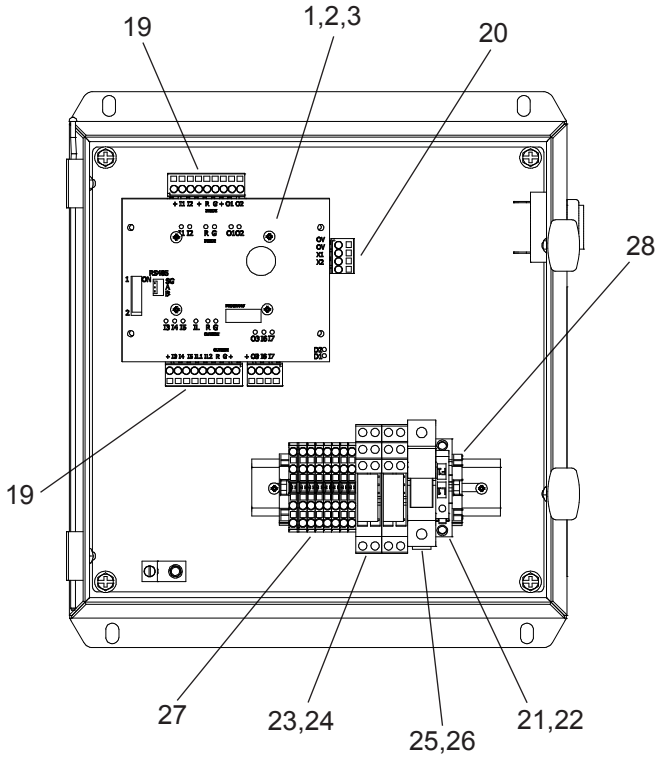
PARTS LISTS

CONTROL PANEL





ITEM	QTY	DESCRIPTION	P/N
-	-	Control Box Assy, 24V	6013795
1	1	Transformer	6008636
2	1	Programmed Control Board	6014057
3	1	Cover Plate, Control Board	6013870
4	1	Audible Alarm w/ Locknut	6009889
5	1	Label, APS 2000 Instructions	6006571
6	1	Push Button, Green	6013065
7	1	Push Button, Yellow	6013067
8	1	Key Switch , 2-Position	6013876
9	1	Spare Keys, One Pair (Not Shown)	AP4087
10	3	Mounting Base, For Push Buttons & Key Switch	6012562
11	3	Contact Block, N/O	6012563
12	1	Contact Block, N/C	6012564
13	1	Light Assy, LED, Red (Includes 2 Red LRU's)	AP2771
14	1	Light Assy, LED, Grn (Includes 2 Grn LRU's)	AP2770
15	1	Lens, Red	SE823100
16	1	Lens, Green	AP0027
17	2	LED Light Replacement Unit (LRU), Red	6006375
18	2	LED Light Replacement Unit (LRU), Grn	6006377

ITEM	QTY	DESCRIPTION	P/N
19	2	PCB Connector, 9 Position	6008824
20	1	PCB Connector, 4 Position	6008822
21	1	Terminal Block, Fused Disconnect	6000538
22	1	Fuse, 0.5A	SE6001052
23	2	Relay, 24VDC	6013687
24	2	Relay Socket/Base	SE6000522
25	1	Fuse Block	6006849
26	1	Fuse, 3A	AP5269
27	8	Terminal Block	6006846
28	2	End Stop	6000549
29	1	Optional Interlock Relay Kit, 30A, 24VDC (Not Shown)	AP6838
30	1	Electrical Schematic (Not Shown)	6013795S
31	1	Label, Arc Flash and Shock Hazard	6002986

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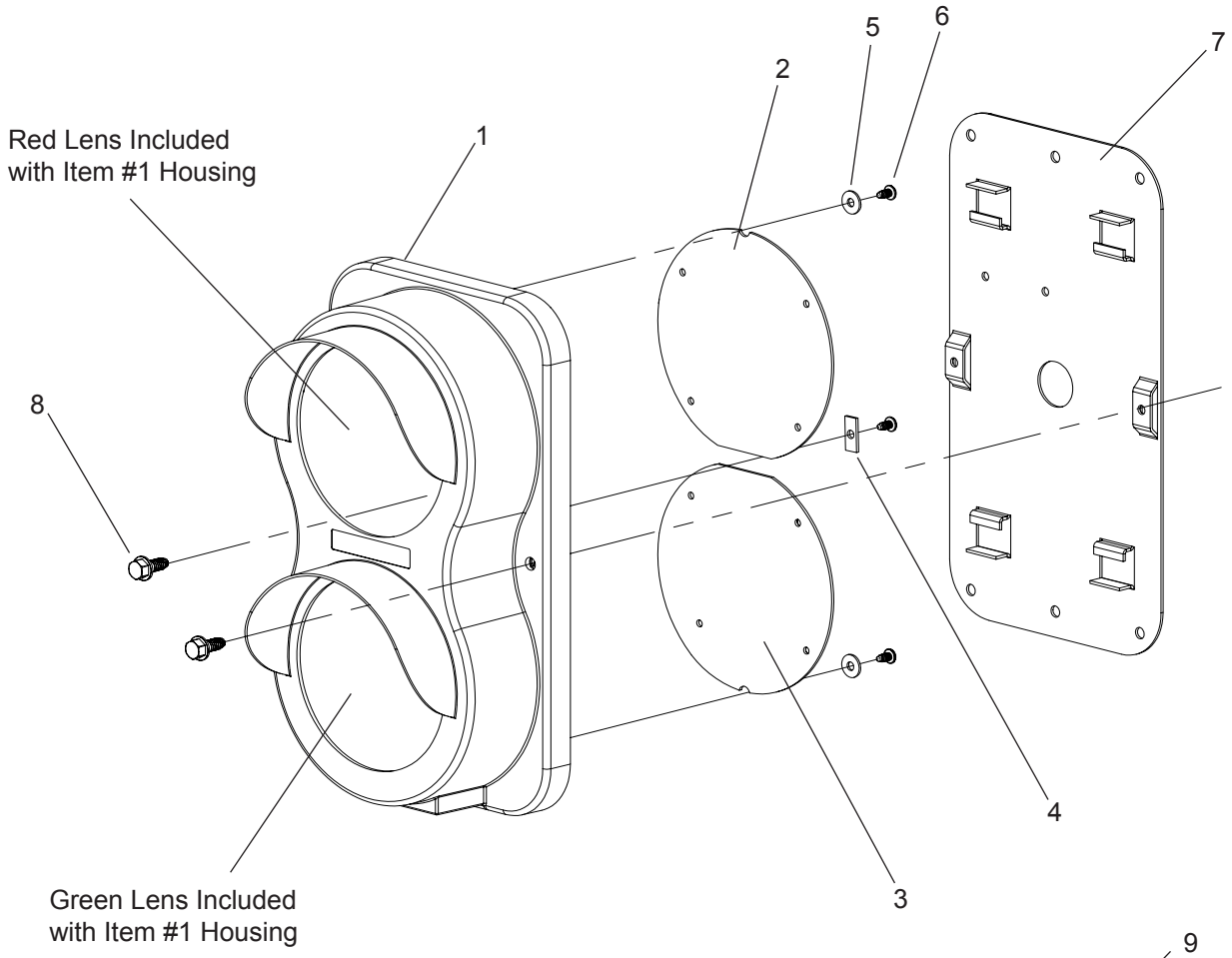
PARTS LISTS

RED/GREEN LIGHT



ITEM	QTY	DESCRIPTION	P/N
-	-	Outside Light, 12-24V, LED	AP4441
1	1	Housing, Complete w/ Red and Green Lenses	6007799
2	1	Red LED Board	6007800
3	1	Green LED Board	6007801
4	1	Circuit Board Retaining Clip	AP4454
5	2	Washer, #8	AP4615
6	3	Screw, Pan Head	AP4453
7	1	Wall Mounting Plate	6007802
8	2	Bolt, Hex Head	AP4614
9	1	Sign, Move On Green Only	709832

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